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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,705	02/13/2004	Shinya Onda	Q77323	5700

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EXAMINER	
CHIEN, LUCY P	
ART UNIT	PAPER NUMBER
2871	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/777,705	ONDA ET AL.	
	Examiner	Art Unit	
	Lucy P. Chien	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,3-6,8-18,20-23,26 and 27 is/are pending in the application.

4a) Of the above claim(s) 2,7,19,24 and 25 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3-6,8-18,20-23,26,27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Comment

Examiner had a phone interview on 11/28/2006 with Allison Tulino. It was brought to Examiner's attention that the rejection sent out on 11/16/2006 was supposed to be a Non-Final but was accidentally marked a Final Rejection. The action is after an RCE and should have been a NON-FINAL REJECTION. Examiner withdraws previous Final rejection sent out on 11/16/2006 and is replacing it with the same rejection as a NON-FINAL REJECTION.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/04/2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1,3,5,6,11,14,17,18,20,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al (Figure 9) (US 5978061) and of Miki et al (US 20030231276) in view of Kane et al (US 6292249).

Regarding Claim 1,17,18,

Miyazaki et al discloses (Figure 9) a first substrate (31) a second substrate (11) a liquid crystal (40) retained between the first substrate (31) and the second substrate (11), at least one first conductive column (shown in figure below) formed on the first substrate (31), the first conductive column comprising a ground column (38) made of an elastic resin (Column 7, Rows 65-67 and Column 8, 1-11) and a first electrode (34) which covers the ground column (38). At least one conductive column contact portion (shown below) electrical connected to the conductive column (shown below) by contact of the first electrode (34) and formed above the second substrate (11) and a seal (37) which bonds the first substrate (31) and second substrate (11) by contacting at least one part of the first conductive column except at a part of the first conductive column which connects the conductive column contact portion. *Regarding Claim 18,* the seal is cured while adhering to a part of the first conductive column other than a part which contacts the conductive column contact portion, while the first conductive column of the first substrate is maintained in contact with the conductive column contact portion of the second substrate. (Column 8, Rows 25-27).

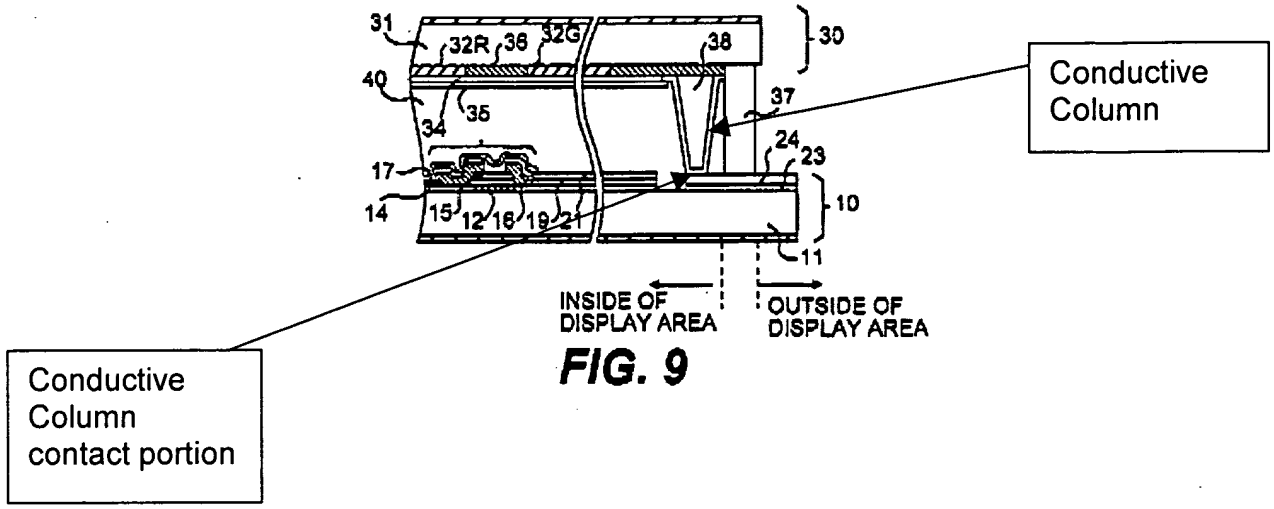

FIG. 9

Miyazaki et al does not disclose the conductive column surrounded by the seal.

Miki et al (Fig. 10) discloses conductive particle (30) surrounded by the seal (13) to provide excellent conductivity (Page 6, [0065-0066]) also the conductive particles (30) in the seal (13) serve as the spacers which would eliminate the need of extra spacers.

It would have been obvious to one of ordinary skilled in the art to modify Miyazaki et al's display to include Miki et al's conductive particles in a seal motivated by the desire to provide excellent conductivity (Page 6, [0065-0066]) also the conductive particles (30) in the seal (13) serve as the spacers which would eliminate the need of extra spacers.

Although Miyazaki et al and Miki et al does not directly say the seal shrinks when a sealing material is set, it is known in the art if the seal is made of thermosetting material or UV curing material the seal will shrink when it is set as shown in Kane et al (Column 4, rows 1-16). Kane et al discloses the seal made of UV curable or thermoset epoxy adhesive will shinks. It is known in the art that seals made of these materials

shrink when it is set. Therefore, it would have been obvious to one of ordinary skilled in the art to have the sealing material shrink when set to maintain a tightly compressed area between substrates in the display (Column 4, rows 1-16).

Regarding Claim 3,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses (Figure 9) at least one conductive column contact portion (shown above) is formed at an input terminal (23,24), which inputs an external signal and where the input terminal is formed on the second substrate (11). (Column 6, Rows 32-45).

Regarding claim 5,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses (Figure 9) the first conductive column is reduced in width from a surface of the first substrate toward the conductive column contact portion.

Regarding Claim 6,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses that Figure 9 is constructed in the same way as embodiment 1 through 4, thus a plurality of first conductive columns contact the conductive column contact portion. (Column 9, Rows 50-60).

Regarding Claim 11,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses that Figure 9 is constructed in the same way as embodiment 1 through 4, thus in the second embodiment (Figure 2, Column 7 Rows 34-55) the second conductive column is formed on the conductive column contact portion of the second substrate, where the second conductive column is connected electrically to the first conductive

column by the common electrode that covers the entire surface of the substrate that also touches the pillar columns.

Regarding Claim 14,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al that Figure 9 is constructed in the same way as embodiment 1 through 4, thus in the second embodiment (Figure 2, Column 7 Rows 34-55) discloses a second conductive column (where 36 Is located) is connected electrically to the first conductive column (to the left of 32G) at a plurality of locations.

Regarding Claim 20,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses (Figure 9) forming a display area on the second substrate (11) forming a plurality of pixel electrodes (19) modulating a state of the liquid crystal on the second substrate (11) forming an input terminal (not shown, (Column 6, Rows 32-45) which inputs an external signal on the second substrate (11) and forming a lead wiring (23) extending from at least one of a plurality of accumulating capacitance lines (Column 6, Rows 32-45) to an outside of the display area electrically connected to the input terminal.

Regarding Claim 23,

In addition to Miyazaki et al and Miki et al as disclosed above, Miyazaki et al discloses (Figure 9) a ground column (38) made of acrylic resin which is a photosensitive resin. (Column 10, 54-67)

Claim 4,8,15,16,21,22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al (Figure 9) (US 5978061) and of Miki et al (US 20030231276) and of Kane et al (US 6292249) in view of Hirakata et al (US 20020024621).

Regarding Claim 4,

Miyazaki et al, Miki et al, and Kane et al discloses everything disclosed above.

Miyazaki et al (Figure 9) discloses the surface of the second substrate (11) facing the first substrate (31) comprises a display area wherein the display area comprises a plurality of pixel electrodes (19) modulating a state of the liquid crystal (40), an input terminal which inputs an external signal (Column 6, Rows 32-45) and a lead wiring (23) extending from at least one of a plurality of accumulating capacitance lines to an outside of the display area and electrically connected to the input terminal.

Miyazaki et al does not disclose the conductive column contact portion is formed in the lead wiring.

Hirakata et al discloses (Fig. 6) the conductive column contact portion (516) is formed in the lead wiring (517).

It would have been obvious to one of ordinary skilled in the art to modify Miyazaki et al, Miki et al, and Kane et al to include Hirakata et al's conductive column contact portion in the lead wiring motivated by the desire to electrically connect the transparent conductive film (510) of the opposing substrate and the lead wiring (517) (Page 8, [0145]).

Regarding Claim 8,

In addition to Miyazaki et al and Miki et al and Hikrakata as disclosed above, Miyazaki et al discloses that Figure 9 is constructed in the same way as embodiment 1 through 4, thus a plurality of first conductive columns contact the conductive column contact portion. (Column 9, Rows 50-60).

Regarding Claim 15,

In addition to Miyazaki et al and Miki et al and Hikrakata as disclosed above, Miyazaki et al discloses that Figure 9 is constructed in the same way as embodiment 1 through 4, thus Figure 1 discloses the second conductive column (to the right of 32G) is formed on the conductive column contact portion of the second substrate (31), and the second conductive column is connected electrically to the first conductive column (to the left of 32G).

Regarding Claim 16,22

In addition to Miyazaki et al and Miki et al and Hikrakata as disclosed above, Miyazaki et al Miyazaki et al discloses that Figure 9 is constructed in the same way as embodiment 1 through 4, thus (Figure 2) further discloses a lengthwise direction of the first conductive column (right of 32G) of the first substrate (31) and lengthwise direction of the second conductive column (left of 32G) of the second substrate (11) coincide with a direction of rubbing of an alignment film formed on the first electrode (34) on the first substrate (31) or each of the first electrode (34) on the first substrate and the pixel electrodes (19) on the second substrate (11).

Regarding Claim 21,

In addition to Miyazaki et al and Miki et al and Hikrakata as disclosed above, Miyazaki et al (Figure 2) further discloses forming a second conductive column (left of 32G) on the conductive column contact portion of the second substrate (11).

Claim 9,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al (Figure 9) (US 5978061) and of Miki et al (US 20030231276) and of Kane et al (US 6292249) in view of Tani (US 6392735).

Regarding Claim 9,

Miyazaki et al, Miki et al, and Kane et al discloses everything disclosed above.

Miyazaki et al, Miki et al, and Kane et al do not disclose at least one spacer is formed in the seal.

Tani discloses at least one spacer (36b) is formed in a seal (36a) so that the counter electrode is in contact with the transfer electrode through the conductive spacers and to maintain the cell gap.

It would have been obvious to one of ordinary skilled in the art to modify Miyazaki et al, Miki et al, and Kane et al to include Tani's spacer motivated by the desire to contact the counter electrode and transfer electrode through the spacer and to maintain a cell gap. (Column 3, rows 55-65).

Regarding Claim 10,

In addition to Miyazaki et al, Miki et al, Kane et al and Tani as disclosed above, Tani discloses (Column 3, rows 55-65) using the spacer to maintain the distance between the first substrate and second substrate substantially constant.

Claim 12,13,26,27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al (Figure 9) (US 5978061) and of Miki et al (US 20030231276) and of Kane et al (US 6292249) in view of Shimizu (US 5995188).

Miyazaki et al, Miki et al, and Kane et al discloses everything disclosed above.

Miyazaki et al,Miki et al, and Kane et al do not disclose where the circumference of the first and second conductive column from a cross section perpendicular to a surface of the first substrate has an arched shape.

Shimizu discloses (Fig. 2E) first and second conductive column (bumps)(14a,14b) (column 5, rows 12-15) from a cross section perpendicular to a surface of the first substrate has an arched shape.

It would have been obvious to one of ordinary skilled in the art to modify Miyazaki et al, Miki et al, and Kane et al to include Shimizu's conductive columns being arched shape motivated by the desire to provide a high reliable easily manufactured liquid crystal display (column 5, rows 10-20).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucy P Chien
Examiner
Art Unit 2871

ANDREW SCHECHTER
PRIMARY EXAMINER